



TANTALA ASSOCIATES
CONSULTING ENGINEERS

5 December 2007
Phila.

Mr. John P. Campbell, P.E.
Director, Right-of-Way Division
TEXAS DEPARTMENT OF TRANSPORTATION
125 East 11th Street
Austin, Texas 78701-2483

Mr. Campbell:

On 30Nov07, at the Administrative Rules Hearing of the *Texas Department of Transportation*, I testified before you about our research which studied the statistical relationship between digital billboards and traffic safety in Ohio. A copy of the study was submitted for the record at that time.

Recently, a review was released by Mr. Jerry Wachtel of the *Veridian Group* in Berkeley, California. The review focuses on two issues in our study: vicinity range and crash exclusions criteria. This brief rejoinder with comments discusses some of these issues.

Regarding vicinity-range, the review criticizes our analysis for excluding accidents beyond a vicinity of 0.20 miles (approximately a 10 second reaction time at 65 mph) "upstream" of any billboard. We believe that this review misrepresents our analysis, because we did not exclude larger ranges. In fact, our analysis compiled statistics for a wide range of vicinities. In each part of our analysis, we examined accident data and statistics at the following distance scales:

- within a viewer-reaction distance (VRD) of the sign location (generally 0.20 miles and approximately corresponding approximately to a 10 second reaction time at 65 mph),
- within a visible range (VR) of the billboard (generally ranging, as listed in Table 2-3 on page 15 our report, from 0.28 miles to 2.15 miles depending on the specific sign, its milieu and observed visible obstructions),
- within a "proximity" or distance-to-nearest-sign range, with results tabulated on Table 4-11 on page 84 of our report, which includes the distance from the recorded accident location to the nearest billboard (these values vary in range and are calculated for each and every accident within the six-year data set, about 33,000 accidents), and

WWW.TANTALA.COM

4903 FRANKFORD AVENUE • PHILADELPHIA, PA 19124-2617 • 215.289.4600
7405 VENTNOR AVENUE • MARGATE, NJ 08402-2819 • 609.822.6288

- a range that includes the entire length of the interstate for each particular billboard as shown in Figures 4-24 and 4-25 on pages 90 and 91 of our report.

Statistical calculations were performed for each of these different, vicinity scales: within viewer reaction distance, within the large visible range, and within the entire route. Each separate and distinct analysis, which includes small to large vicinity scales, supports our original conclusion.

Regarding crash-exclusions criteria, the review opines that our analysis should not exclude “bias” factors because accidents are often multi-causal and those are the very factors that increase the likelihood of accidents. We agree, we did include this in part of our study. In fact, we performed an analysis that included all data collected and compiled by the State of Ohio; this data includes drivers under the influence of alcohol and/or drugs, hitting deer, speeding, adverse weather, accidents at interchanges, etc. This robust, comprehensive and all-inclusive data-set includes the very multi-causal accidents that the review references. In addition to the all-inclusive analysis, we methodically examined different subsets of the data to see the influence, if any, on the analysis. These additional subset-analyses, as discussed on page 49 of our report, excludes events that clearly have a dominant cause as recorded by the State of Ohio in accident reports: DUIs, adverse weather, and hitting a deer. These subset analyses are above and beyond the all-inclusive, whole-set analysis. In each case, statistical calculations were performed; each separate and distinct analysis, which includes all-inclusive to partial crash exclusion criteria, supports our original conclusions.

The review also discusses accident-reporting data as limited and under-reported, and cites police investigations as cursory. This may be true and some accidents are not reported on interstates. However, this report studies the massive statistics of the best data available near multiple sign conversions; with six years of interstate accident data, certainly 33,000 accidents are representative of the trends observed. Another point that the review makes is that accidents often may be recorded where vehicles came to rest and not where the inattention may first occur. This may be a reasonable point, and is something that we considered when we studied accident statistics beyond the viewer reaction range (0.20 miles) and into the visible range of the sign (up to 2.15 miles) to include more data “upstream” of the sign. Finally, the review also discusses our correlation-analysis methods and says that “in a real world environment would be grateful to achieve results where correlation coefficients of 0.7 were found.” We agree. However, in all cases the associations between billboards and accidents demonstrated correlation coefficients were well below 0.3 as listed in Table 4-11 on page 84 of our report and shown graphically with Figures 4-19 to 4-22 on pages 85 to 88 of our report.

Ohio was an unique opportunity for our study and for units of government concerned about the statistical associations between digital billboards and traffic safety; our study was able to analyze robust data-sets from interstate locations that have had seven conventional billboards converted to digital format. Certainly, no data is perfect and no analysis can be definitive. However, our analysis and conclusions are independent, methodical, intellectually honest and based on the State of Ohio's own accident data.

In light of the issues raised, we are confident in the conclusion of our study that digital billboards have no statistically significant relationship with occurrence of accidents. Simply stated, the data shows no increase in accident rates.

Please feel free to contact us if should you have any questions.

Sincerely,

 **TANTALA ASSOCIATES**



Michael W. Tantala, P.E.

MWT:ows

